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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,064	10/24/2005	Hiroshi Yageta	Q90770	4501

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EXAMINER	
ENIN-OKUT, EDU E	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
01/26/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/554,064	YAGETA ET AL.	
	Examiner	Art Unit	
	Edu E. Enin-Okut	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FILM-PACKAGES ELECTRIC DEVICE AND ITS MANUFACTURING METHOD

DETAILED ACTION

Detailed Action

1. The amendments filed on October 24, 2008 were received. Applicant amended claim 10. Claims 1-10 are pending.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in the prior Office action issued on August 8, 2008.

Drawings

3. The objection to the drawings is withdrawn due to amendments made by Applicant.

Claim Rejections - 35 USC § 102

4. The rejection of claims 1-3, 5-6 and 9 under 35 U.S.C. 102(e) as being anticipated by Higuchi et al. (US 7,261,971) is maintained. The rejection is repeated below for convenience.

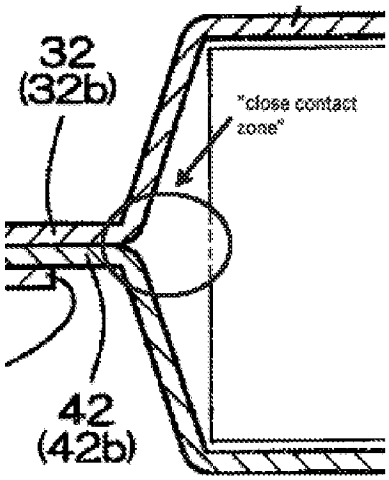
Regarding claim 1, Higuchi discloses a film covered electric device (Abstract) comprising:

- an electric device element [5] to which a positive pole lead and a negative pole lead [54, 55] are connected (Abstract; 9:42-47);
- and a casing film [3, 4] having at least a metal layer (3:63-67) and a thermally sealable resin layer laminated to each other (10:65-11:8), said casing film sandwiching said electric device element from both sides in its thickness direction with said thermally sealable resin layer being placed inside, wrapping said electric device element, and being thermally sealed around

said electric device element to seal said electric device element with said leads extended therefrom (Abstract; Figs. 1, 3),

- wherein said casing film has a cup area [31, 41] for receiving said electric device element therein, whereby a thermally sealed area formed by thermally sealing said casing film is positioned between both surfaces of said electric device element in the thickness direction in regard to the thickness direction of said electric device element (9:42-47; 10:25-27; Figs. 1),
- at least one of sides of said casing film, from which said leads are not extended, is formed with a close contact zone (see figure below) in which said casing films directly opposing without intervention of said electric device element are in close contact with each other without being thermally sealed, between said thermally sealed area and said electric device element, and L2 ≥ (1/2) L1 is satisfied, where L1 is a distance from one end to the other end of an inner edge of said thermally sealed area and L2 is the length of said close contact zone in a direction along the side formed with said close contact zone (11:17-38; Figs. 1, 3, 7, 8).

Labeled figure from Higuchi:



Regarding claim 2, Higuchi discloses that the close contact zone is formed at a position including a center of a range from one end to the other end of an inner edge of said thermally sealed area on the side formed with said close contact zone (11:17-38; Figs. 1, 3).

Regarding claim 3, Higuchi discloses that the close contact zone is formed over the entire range from one end to the other end of the inner edge of said thermally sealed area on the side formed with said close contact zone (11:17-38; Figs. 1, 3).

Regarding claim 5, Higuchi discloses that the close contact zone is formed along all sides of said casing film from which said leads are not extended (5:41-44, 11:17-38; Figs. 1, 3).

Regarding claim 6, Higuchi discloses that the cup area is formed on both sides in the thickness direction of said electric device element (9:42-47; 10:25-27; Figs. 1).

Regarding claim 9, Higuchi discloses that the electric device element is a chemical cell element [battery with an electrode body 5 and an electrolyte] (Abstract; 9:42-47).

Claim Rejections - 35 USC § 103

5. The rejections of claims 4, 7, 8 and 10 under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. in view of Yata et al., Onda et al. and Fukuda et al. are maintained. The rejections for claims 4, 7 and 8 are repeated below for convenience. The rejection of the amended claim 10 is also presented below.

6. Claim 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al.

Higuchi is applied and incorporated herein for the reasons above.

Regarding claims 4 and 7, Higuchi does not expressly teach that close contact zone has a width which continuously or discontinuously varies such that the width is largest at the center in the range from

one end to the other end of the inner edge of said thermally sealed area on the side formed with said close contact zone; or, that the close contact zone has a width of 0.5 mm or more.

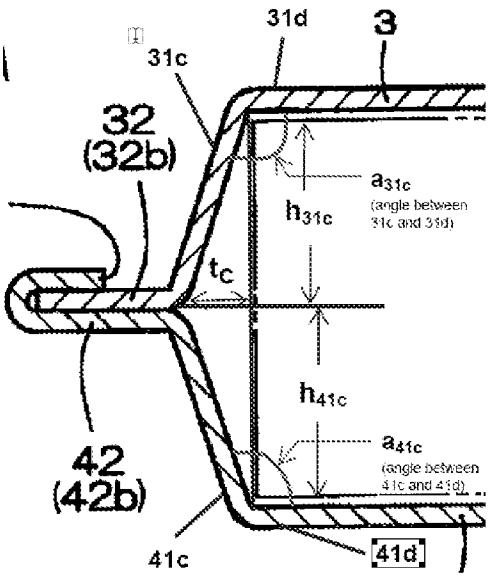
However, Higuchi does teach a circumferential side 31c which forms a side of a depression 31 can be inclined at a prescribed obtuse angle (90 to 130 degrees) relative to a flange portion 32 or a bottom surface 31d of a depression 31 (11:17-22; Figs. 3, 5). A circumferential side 41c which forms a side of a depression 41 of the metal lid 4 may be inclined at a prescribed angle (90 to 180 degrees) relative to a flange portion 42 of the metal lid 4 or a bottom surface 41d of a depression 41 (11:22-27; Figs. 3, 5). By doing this, a gap C produced between an inner surface of a can and an electrode body 5 at a corner in the battery can 2 is increased slightly and, therefore, to that extent, a space which can be utilized as a reservoir for a electrolyte is increased and, as a result, an amount of an electrolyte to be injected into the battery can 2 can be increased (11:27-33; Figs. 3, 5).

One of ordinary skill in the art would appreciate that the width of close contact zone (see "t_c" of figure below) of Higuchi can vary from approximately 0 to 2.27 mm by varying the angles of the side walls of the depressions 31, 41 of Higuchi. That artisan would also appreciate that Higuchi expressly teaches a close contact zone of 1.48 mm. (See the figure and calculations below.)

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I). Further, the courts have held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. See MPEP 2144.05 (II).

Calculations:

Higuchi teaches that the battery can have a thickness of 3 mm or less (5:45-47). The reference also teaches that both of thicknesses of a can body 3 and a metal lid 4 may be 0.2 mm or smaller, more preferably around 0.15 mm (8:1-2).



Thus,

$(t_c) / [\sin (a_{31c}-90)] = (h_{31c}) / [\sin (180 - (90+(a_{31c}-90)))]$

$(t_c) / [\sin (a_{41c}-90)] = (h_{41c}) / [\sin (180 - (90+(a_{41c}-90)))]$

$h_{31c} + h_{41c} = (3-2(0.15))$ mm

In an example from Higuchi, a circumferential side 31c of a can body 3 is formed by inclining at an angle of 120 degrees relative to its bottom surface 31d, and a circumferential side 41c of the metal lid 4 is formed by inclining at an angle of 175 degrees relative to its bottom surface 41d, respectively (11:33-38). So,

$t_c = 0.58h_{31c}$; and, $tc = 11.43_{h41c}$;

$h_{41c} = 0.0507h_{31c}$;

$1.0507h_{31c} = 2.7$ mm; and,

$h_{31c} = 2.57$ mm, so $t_c = 1.48$ mm.

Further, as a_{31c} and a_{41c} approaches 90°, $t_c = 0$ mm. And, if $a_{31c} = 130$ and a_{41c} approaches 180°, $t_c = 2.27$ mm.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. in view of Yata et al. (US 2004/0048152).

Higuchi is applied and incorporated herein for the reasons above.

Regarding claim 8, Higuchi teaches the total thickness of its battery, used for small electronic devices, is 3 mm or less (Title; 5:45-47).

Higuchi does not expressly teach that the electric device element has a thickness of 6 mm or more.

Yata teaches a flat, non-aqueous secondary battery having positive and negative electrodes and a negative electrolyte for use in portable devices, household energy storage systems, and in the energy system of an electric vehicle or the like has a thickness of preferably less than 12 mm, more preferably less than 10 mm, and still more preferably less than 8 mm (para. 3, 71-72). The lower limit of the thickness, 2 mm or more, is practical when considering the packing efficiency of electrode and the size of a battery (para. 72).

It would have been obvious to one of ordinary skill in the art at the time of the invention to form the battery of with a thickness of 6 mm or more, as taught by Yata, to design the battery that both has the capacity to provide adequate power the load to which it is attached, and has a maximum thickness at which an sufficient radiation of heat away from the battery is obtained thereby reducing the possibility of fluctuations of charge capacity and voltage (see Yata, para. 71-72).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. in view of Onda et al. (JP 2001-052748) and Fukuda et al. (US 6,877,216).

Higuchi is applied and incorporated herein for the reasons above.

Regarding claim 10, Higuchi teaches a method of manufacturing a film covered electric device, comprising the steps of: sandwiching an electric device element to which a positive pole lead and a negative pole lead are connected by a casing films having at least a metal layer and thermally sealable resin layer laminated to each other from both sides in a thickness direction of the electric device element (Abstract; 3:63-67, 10:65-11:8; Figs. 1, 3); and thermally sealing peripheral sides of the casing film which

sandwiches said electric device element with the leads being extended from said casing films to seal the electric device element within said casing film (10:41-47, 10:58-64; Fig. 3).

Higuchi does not expressly teach that the step of thermally sealing the casing film is accomplished by at least the last one side of the peripheral sides being thermally sealed in a reduced pressure atmosphere and returning surroundings of the casing film which seals said electric device element into an atmospheric pressure; or, applying pressure to the casing film with a thermal sealing head for heating and pressurizing said casing films being placed at a position spaced apart by 2 mm or more from said electric device element.

As to at least the last one side of the peripheral sides being thermally sealed in a reduced pressure atmosphere and returning surroundings of the casing film which seals said electric device element into an atmospheric pressure, Onda teaches a sealing process for a non-aqueous electrolyte battery encased by a laminate film where the welding of the periphery of the film is undertaken in a at pressures below than atmospheric, such as 0.5 atm or less, and returned to atmospheric once it is completed (para. 3, 13-16, 27, 29; claims 1, 4-6).

One of ordinary skill in the art at the time of the invention would have found it obvious to seal the casing film of Higuchi in the manner taught by Onda because it can improve adhesion between the electrode plate groups and thereby improve battery characteristic (see Onda, para. 15).

As to applying pressure to the casing film with a thermal sealing head for heating and pressurizing said casing films being placed at a position spaced apart by 2 mm or more from said electric device element, Fukuda teaches heat-sealing machine with sealing heads used to hot seal the tabs of a polymer battery module (Abstract). The polymer battery module is a laminated structure composed of nylon/bonding layer/aluminum layer/bonding layer/polyethylene layer (4:13-18). The sealing heads are used to effectively apply pressure and heat necessary for sealing and preventing unsealed gaps (3:42-51).

Further, Higuchi does teach, as discussed above with respect to claims 4 and 7, that a close contact zone about the periphery of the electric device element of 2 mm can be formed.

One of ordinary skill would appreciate that the distance of the thermal sealing heads from the electric device element during the sealing of the casing film dictates the width of the close contact zone formed.

Therefore, it would have been obvious to apply pressure to said casing film of Higuchi with a thermal sealing head for heating and pressurizing the casing films, as taught by Fukuda, with the thermal sealing heads being placed at a position spaced apart by 2 mm or more from said electric device element of Higuchi, to form a seal of its casing film because it is known in the art as a sealing method that prevents the occurrence of prevents unsealed gaps.

The remaining limitations recited in the claim have been addressed above with respect to claim 1.

Response to Arguments

9. Applicant's arguments filed October 24, 2008 have been fully considered but they are not persuasive.

10. As to Applicant's arguments with respect to the Higuchi et al. reference (see p. 7-8 of the Remarks), Higuchi et al. teaches:

> "A circumferential side 31c which forms a side of a depression 31 of a can body 3 may be formed at a right angle relative to a flange portion 32 or a bottom surface 31d of a depression 31, but as shown in FIG. 1 and FIG. 3, it may be inclined at a prescribed obtuse angle (90 to 130 degrees) relative to a flange portion 32 or a bottom surface 31d of a depression 31. In addition, a circumferential side 41c which forms a side of a depression 41 of the metal lid 4 may be inclined at a prescribed angle (90 to 180 degrees) relative to a flange portion 42 of the metal lid 4 or a bottom surface 41d of a depression 41. By doing this, a gap C produced between an inner surface of a can and an electrode body 5 at a corner in the battery can 2 …" (11:16-29).

This gap, which runs the entire perimeter of the top and bottom portions of the battery can, is also shown in Figs. 7, 8, 9A-B and 10. These figures also show that an area, equivalent to Applicant's "close contact zone" is formed between the battery's electrode body and the sealed portion of battery can, also shown in the figure from Higuchi reproduced above, is also formed. Thus, Applicant's arguments with respect to the Higuchi et al. reference are not persuasive.

11. With respect to contentions made with respect to claims 4 and 7, Applicant's arguments as to a "length" not relevant to the recitations made in the claims. The claims recite elements relating to the width of the close-contact zone.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence / Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday-Thursday, 7 a.m. - 3 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E Enin-Okut/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795